

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/087520 A1

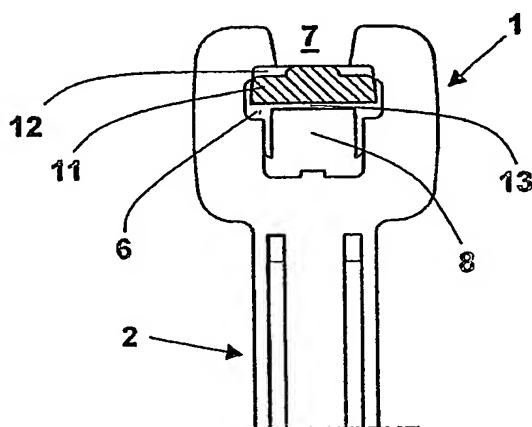
- (51) International Patent Classification⁷: **B65D 63/10**
- (21) International Application Number:
PCT/SE2004/000457
- (22) International Filing Date: 25 March 2004 (25.03.2004)
- (25) Filing Language: Swedish
- (26) Publication Language: English
- (30) Priority Data:
0300979-2 3 April 2003 (03.04.2003) SE
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DEVICE IN A BUNDLE TIE



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The ridge (12) is designed, with the projections (11) inserted into the through-opening (6) of the locking head (1) and engaging with the opposing walls of the opening (6), to abut the locking head (1). The fact that the projections (11) are of thinner than the grip tab (4) creates a clearance interval (13) between the insertion part and the locking tongue (8).

(57) Abstract: The invention relates to a device in a cable tie. This comprises an elongate band part (2) of a certain width and thickness, which at one end has an elongate insertion narrower than the band part and terminates in a grip tab, and at its other end has a locking head (1). The locking head (1) has, on the one hand, a through-opening (6) which is intended for the band part (2) and has substantially the same width as the band part (2) but a height greater than the thickness of the band part (2) and, on the other hand, a slot-shaped recess (7) in one transverse wall of the opening (6), the width of which recess is such that it will allow the insertion part to be inserted into the opening (6) via the recess (7), forming a band loop. On the band part (2) there is toothing (10) and in the locking head (1) a locking tongue (8) provided with toothings (9), which are designed, by means of a positive interlock, to lock the band part (2) in relation to the locking head (1). In the area around the connection of the insertion part (3) to the grip tab there are wing-like projections (11) extending transversely and out from the insertion part (3), which are thinner than the grip tab (4) and which towards the latter terminate in a ridge (12). In forming the band loop, the

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DEVICE IN A BUNDLE TIE.

The present invention relates to a device according to the pre-characterising clause of claim 1.

This refers to what the invention has in common with the prior art in this field as
5 disclosed by WO 99/180 05.

A particular advantage with a cable tie having an open locking head, that is to say a cable tie, the locking head of which has a slit for an insertion part allowing the band to be rapidly inserted into the locking head, is the facility for producing a suspendible loop,
10 which can be opened and which allows bundles of wires, which are to be subsequently tied together, to be easily threaded through the loop. It has emerged, however, that the locking tongue providing with ratchet teeth, which is situated in the locking head and is intended, as the tie is being tightened, to be brought into engagement with ratchet teeth or ribs on the band, can be damaged so that the engagement between the locking tongue
15 and the ribbing is impaired, with the risk that the cable tie will cease to function.

The object of the invention is to prevent such damage to the locking tongue. According to the invention this is achieved by the features specified in the characterising part of claim 1.

20 The invention will be explained in more detail below with reference to the drawing attached in which Fig. 1 shows a plan view of a cable tie having a device according to the invention. Figs. 2a, 2b, in sections along and through the band respectively, show how the device according to the invention achieves a clearance interval between the
25 insertion part of the cable tie and the locking tongue thereof. Fig. 3a shows a detailed view of the device according to the invention in the embodiment shown in Fig. 1. Fig. 3b is a detailed view of an alternative embodiment of a device according to the invention.

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The embodiment of a cable tie according to the present invention shown in Fig. 1 comprises a housing part 1, a band part 2, an insertion part 3 narrower than the band part 2, and an end part 4 serving as grip tab. The band part 2 is in principle of any length, as is the insertion part 3, although the latter should be at least equal in length to the housing

- 5 1. The end part 4 is wider than the band part 2 and is provided on at least one side with ridges 5 in order to facilitate gripping of the part when tightening the band around a cable bundle or the like, for example.

10 The housing 1 is provided with a through-opening 6, which extends in the longitudinal direction of the housing 1 and transversely to the band parts 2-4. A slot-shaped recess 7 extends through the upper wall of the housing and is of a width designed to match the insertion part 3 and outwardly bevelled edges, which may also be regarded as guide edges for bringing the insertion part 3 down into the through-opening 6. A locking member in the form of a tongue 8 is arranged in the through-opening 6. The tongue 8 emerges from the bottom of the through-opening 6 and basically extends diagonally towards the opposite end of the opening 6 and towards the slot-shaped recess 7. On the side facing the slot-shaped recess 7 the tongue 8 is provided with a number of ratchet teeth 9, which are intended to interact with corresponding ratchet teeth 10 on the band part 2.

15 20 The fact that the shape of the end part 4 prevents it running through the opening 6 means that an openable loop, which loosely encloses a bundle of cables, for example, can be produced by bringing the insertion part 3 down into the recess 7. Further cables can be inserted through this loop, as required before the cable tie is tightened. After threading the band part 3 into the through-opening 6 on top of the tongue 8 this will be pressed 25 down towards the bottom of the opening 6 by the aforementioned cable tie. It has emerged that there is not always sufficient resilience to ensure engagement between the teeth 9 and 10, with the result that the aforementioned problems arise.

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According to the invention, there are wing-like projections 11, thinner than the grip tab 4 and extending transversely to the insertion part 3 in the area around the connection of the insertion part 3 to the grip tab 4. Towards the grip tab 4 these projections 11 terminate in a ridge 12 serving as a stop, which ridge in forming the band loop as stated above is 5 designed, with the projections 11 inserted into the through-opening 6 of the locking head 1 and bearing against the opposing walls of the opening 6 to abut the locking head 1. The fact that the projections 11 are thinner than the grip tab 4 creates a clearance interval 13 between the insertion part 3 and the locking tongue 8, which ensures that the tongue 8 is always in the position in which its teeth 9 afford effective locking through engagement 10 with the teeth 10 of the band 2. This clearance interval 13 is clearly visible from Fig. 2b.

In the preferred embodiment shown in Figs. 1 and 3a, the projections 11 and the ridge 12 are incorporated into the grip tab 4. In the embodiment shown in Fig. 3b the grip tab 4 emerges from the ridge 12 and therefore constitutes an independent section.

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Claims

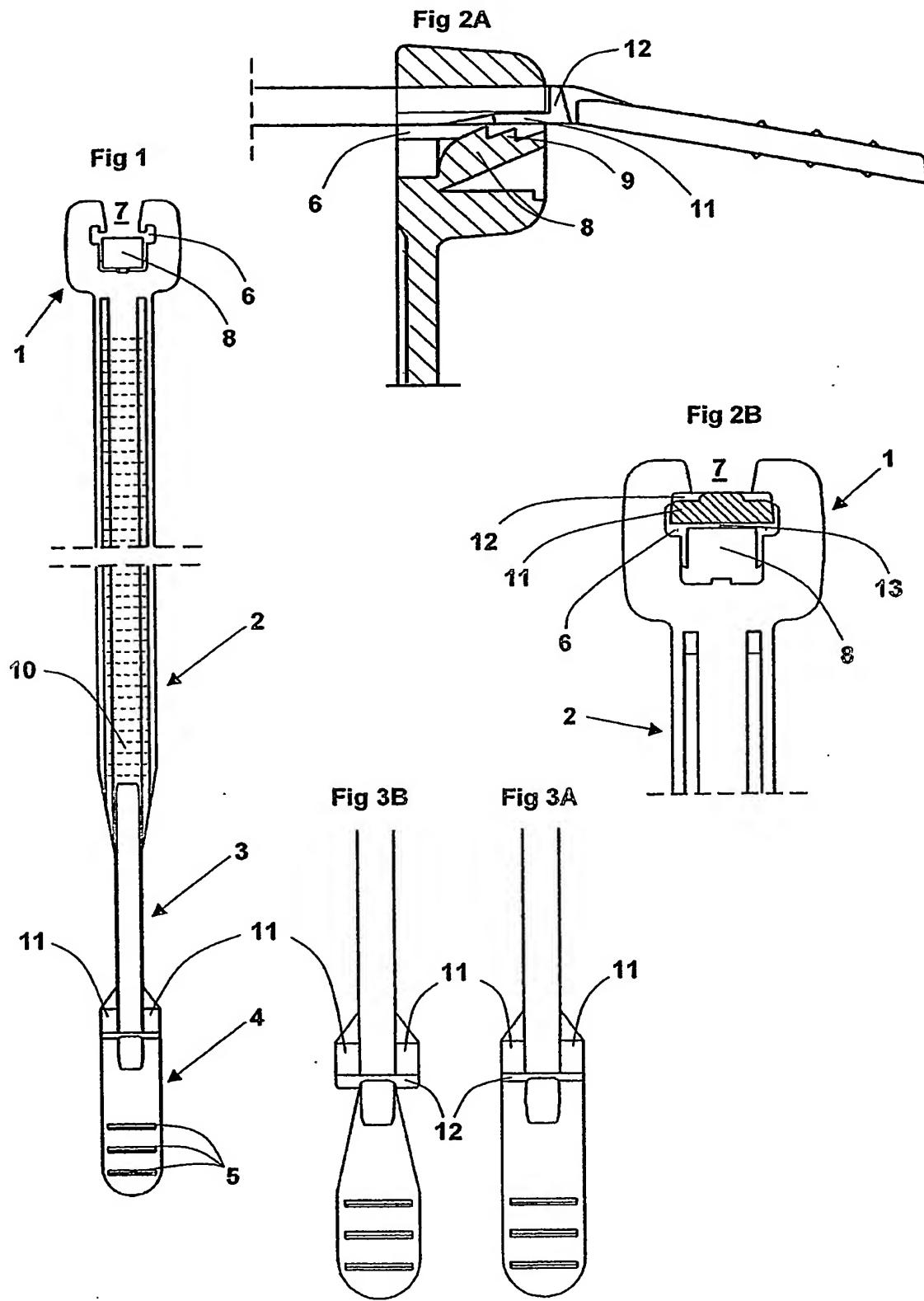
1. Device in a cable tie comprising an elongate band part (2) of a certain width and thickness, which at one end has an elongate insertion part (3) narrower than the band part (2) and terminating in a grip tab (4), and at its other end has a locking head (1) with, on the one hand, a through-opening (6) which is intended for the band part (2) and is somewhat wider than the band part (2) and has a height somewhat greater than the thickness of the band part (2), and on the other hand a slot-shaped recess (7) in one transverse wall of the opening (6), the width of which recess is such that it will allow the insertion part (3) to be inserted into the opening (6) via the recess (7), forming a band loop, there being toothing (10) on the band part (2) and a locking tongue (8) provided with toothing (9) in the locking head (1), which are designed, by means of a positive interlock, to lock the band part (2) in relation to the locking head (1), characterised in that in the area around the connection of the insertion part (3) to the grip tab (4) there are wing-like projections (11) extending transversely and out from the insertion part (3), which are thinner than the grip tab (4) and which towards the latter terminate in a ridge (12), which ridge in forming the band loop is designed, with the projections (11) inserted into the through-opening (6) of the locking head (1) and bearing against the opposing walls of the opening (6), to abut the locking head (1), the fact that the projections (11) are thinner than the grip tab (4) creating a clearance interval (13) between the insertion part (3) and the locking tongue (8).
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2. Device according to Claim 1, characterised in that the projections 11 are incorporated into the grip tab (4).

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SUBSTITUTE SHEET (RULE 26)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 2004/000457

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B65D 63/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A | WO 9918005 A1 (AHLGREN, OVE), 15 April 1999 (15.04.1999) -- ----- | 1,2 |

Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search

2 June 2004

Date of mailing of the international search report

21-06-2004

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

30/04/2004

PCT/SE 2004/000457

| | | | | | | |
|----|---------|----|------------|----|--------------|------------|
| WO | 9918005 | A1 | 15/04/1999 | AU | 9469098 A | 27/04/1999 |
| | | | | BR | 9812877 A | 08/08/2000 |
| | | | | CA | 2305584 A | 15/04/1999 |
| | | | | CN | 1271321 T | 25/10/2000 |
| | | | | CZ | 20001218 A | 12/12/2001 |
| | | | | DE | 19881761 T | 12/10/2000 |
| | | | | EP | 1051336 A | 15/11/2000 |
| | | | | JP | 2001519292 T | 23/10/2001 |
| | | | | PL | 339623 A | 02/01/2001 |
| | | | | SE | 510655 C | 14/06/1999 |
| | | | | SE | 9703637 A | 07/04/1999 |